

**Precalculus Worksheet**  
**Section 4.7 – Inverse Trig Functions**

**Name** \_\_\_\_\_  
**Period** \_\_\_\_\_

**Evaluate the given expression without the aid of a calculator.**

1.  $\sin^{-1}\left(\frac{1}{2}\right)$

2.  $\cos^{-1}\left(\frac{1}{2}\right)$

3.  $\tan^{-1}\left(\frac{\sqrt{3}}{3}\right)$

4.  $\arccos\left(\frac{\sqrt{3}}{2}\right)$

5.  $\arcsin\left(\frac{\sqrt{2}}{2}\right)$

6.  $\arctan(1)$

7.  $\arcsin^{-1}\left(-\frac{1}{2}\right)$

8.  $\arccos\left(-\frac{1}{2}\right)$

9.  $\arctan\left(-\frac{\sqrt{3}}{3}\right)$

10.  $\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$

11.  $\sin^{-1}\left(-\frac{\sqrt{2}}{2}\right)$

12.  $\tan^{-1}(-1)$

13.  $\sin^{-1}0$

14.  $\cos^{-1}0$

15.  $\tan^{-1}(-\sqrt{3})$

16.  $\arcsin(1)$

17.  $\arccos(1)$

18.  $\tan^{-1}0$

19.  $\arcsin(-1)$

20.  $\arccos(-1)$

**Find the exact value without a calculator.**

21.  $\cos\left(\sin^{-1}\left(\frac{1}{2}\right)\right)$       22.  $\sin\left(\cos^{-1}\left(\frac{\sqrt{2}}{2}\right)\right)$       23.  $\sin^{-1}\left(\cos\left(\frac{\pi}{3}\right)\right)$

24.  $\cos^{-1}\left(\sin\left(\frac{\pi}{6}\right)\right)$       25.  $\sin^{-1}\left(\sin\left(\frac{7\pi}{4}\right)\right)$       26.  $\arccos\left(\sin\left(\frac{\pi}{3}\right)\right)$

27.  $\sin\left(\tan^{-1}(\sqrt{3})\right)$       28.  $\cos\left(\tan^{-1}(-1)\right)$       29.  $\tan^{-1}(\cos(\pi))$

**Find an algebraic expression equivalent to the given expression.**

30.  $\tan\left(\arccos\left(\frac{x}{3}\right)\right)$       31.  $\sin(\arccos(x))$       32.  $\sin\left(\arctan\left(\frac{x}{2}\right)\right)$

**Evaluate using your calculator to find the approximate value. Express your answer in degrees.**

33.  $\sin^{-1}(.8621)$       34.  $\tan^{-1}(.5893)$       35.  $\cos^{-1}(-.3218)$   
36.  $\arcsin(-.6821)$       37.  $\arctan(-1.6283)$       38.  $\arccos(.2814)$

**Evaluate using your calculator to find the approximate value. Express your answer in radians**

39.  $\arcsin(.2618)$       40.  $\cos^{-1}(-.8090)$       41.  $\tan^{-1}(-1.7321)$

## Section 4.7 WS Answers

- |                          |                              |                          |                              |
|--------------------------|------------------------------|--------------------------|------------------------------|
| 1. 30                    | 2. 60                        | 3. 30                    | 4. 30                        |
| 5. 45                    | 6. 45                        | 7. -30 or 330            | 8. 120                       |
| 9. -30 or 330            | 10. 150                      | 11. - 45 or 315          | 12. - 45 or 315              |
| 13. 0                    | 14. 90                       | 15. -60 or 300           | 16. 90                       |
| 17. 0                    | 18. 0                        | 19. -90 or 270           | 20. 180                      |
| 21. $\frac{\sqrt{3}}{2}$ | 22. $\frac{\sqrt{2}}{2}$     | 23. 30                   | 24. 60                       |
| 25. 315 or -45           | 26. 30                       | 27. $\frac{\sqrt{3}}{2}$ | 28. $\frac{\sqrt{2}}{2}$     |
| 29. 315 or -45           | 30. $\frac{\sqrt{9-x^2}}{x}$ | 31. $\sqrt{1-x^2}$       | 32. $\frac{x}{\sqrt{x^2+4}}$ |
| 33. 59.55                | 34. 30.51                    | 35. 108.77               | 36. -43.01                   |
| 37. -58.44               | 38. 73.66                    | 39. 0.2649               | 40. 2.5132                   |
| 41. -1.0472              |                              |                          |                              |